

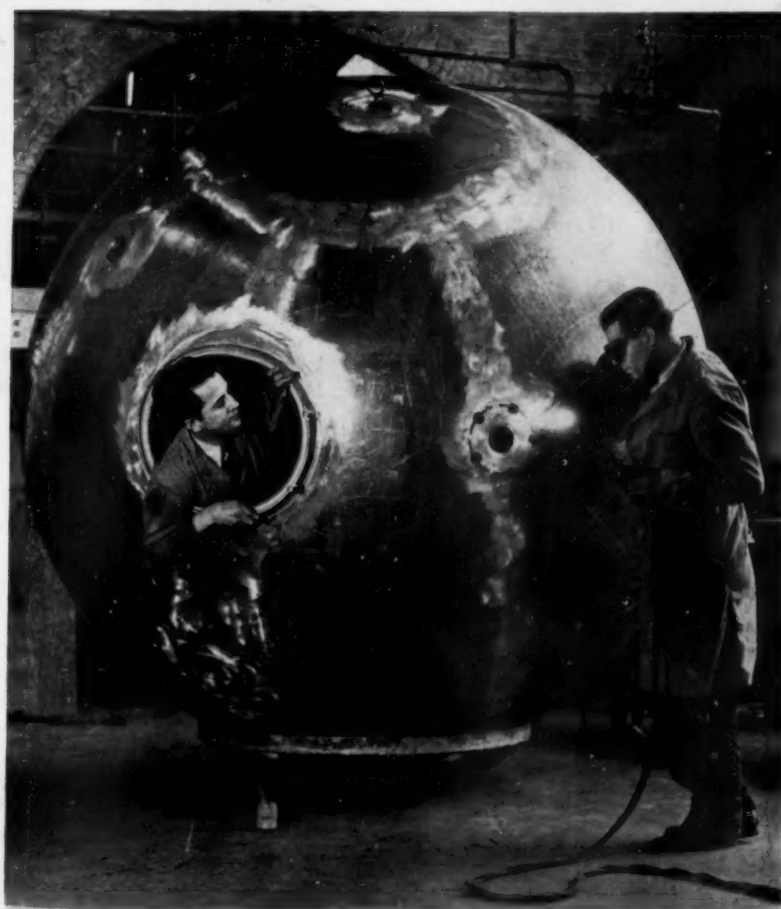
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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



MAY 19, 1934

New Sky Globe

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## DO YOU KNOW?

Four-fifths of the raw rubber produced today goes into tires and their accessories.

The discovery that beets contain sugar, like ordinary commercial sugar, was made by a German chemist in 1747.

Apparatus for making sound motion pictures is being developed in simplified form, so that amateur talkies may soon be feasible.

Logwood, the heart-wood of a tropical tree, is important to the dye industry, the extract being used in red dye and in weighting silk.

There were 40,000 more marriages in the large German cities in 1933 than in 1932, due presumably to state efforts to promote marriage.

The chemist's success in competing with nature in producing lemon oil and citrate of lime has been a serious blow to Italy's fruit acid industry.

Government scientists are mixing small samples of synthetic soils, in an effort to find out how to improve real soils that are faulty for road building.

A parachute for helpless sick patients is the latest thing in equipment for ambulance airplanes.

Approximately one-fourth of the bird species of the United States have been found in the District of Columbia.

In the language of the African Bushmen, a word may have different meanings according to the tone and inflection of the voice.

Trachoma, the principal cause of blindness throughout the world, is reported to be on a downward trend in the United States.

The Indian Bill of Rights, sponsored by the government to improve the Indian's lot, has been approved by 36 tribes, seven voting against it.

The skeleton of an ancient whale was recently found by a college student at a point 75 miles inland on the Chowan River, North Carolina.

A pair of crutches, made of forked tree limbs and cushioned with fiber and buckskin, was found in a cliff dwelling in Utah, dating from about 1100 A.D.

## WITH THE SCIENCES THIS WEEK

## BOTANY

On what kind of tree do straw hats grow? p. 307.

## CHILD CARE

What can be done for the deaf baby? p. 316.

## COSMOLOGY

What is the shape of the Andromeda nebula? p. 308. *Star Clusters*—Harlow Shapley—McGraw-Hill, 1930. \$3.

## EVOLUTION

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## GENERAL SCIENCE

Where can students of the future hear the voices of today's great? p. 313.

## MEDICINE

What are the advantages of the radio knife? p. 318.

What disease may cause a neuter race? p. 314.

What is cod liver oil good for? p. 307.

Will the tired person catch cold easily? p. 308. *The Common Head Cold and its Complications*—Walter A. Wells—Macmillan, 1929, \$2.75.

## METEOROLOGY

When were dust storms usual? p. 307. *The Realm of the Air*—Charles Fitzhugh Talmán—Bobbs-Merrill, 1925, \$4.

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## PALEONTOLOGY

What animal looked like an inverted T? p. 313. *Paleontology*—Edward Wilber Berry—McGraw-Hill, 1929, \$3.50.

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Are neurotic tendencies responsible for the tendency to join a mob? p. 317. Can rats read? p. 315. What is "projection jealousy"? p. 312.

## RADIO

How does rain interfere with radio? p. 312.

## SEISMOLOGY

What has the moon to do with earthquake shocks? p. 313.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information for the article, but the references for further reading. Books cited can be supplied at Book Department, Science News Letter, at publishers' prices, postpaid in the United States.

## METEOROLOGY

# Great Dust Storm Formed From Corn Belt Top-Soil

Wind-Erosion Almost as Harmful as Water-Erosion To the Land, But Effects on Health Will be Small

**E**ASTERN and Southern states that gazed astonished—and perhaps a bit scared—at a bleary sun masked by an endless screen of yellow-gray dust, on the second week-end in May, were actually staring through parts of Kansas, Nebraska, the Dakotas and Iowa suddenly gone "on the loose".

For the great dust storm of mid-May, 1934, which will probably still be talked about when we are all Oldest Inhabitants, was no local affair. The billions of billions of particles that filled the air had travelled far.

A pair of weather maps compiled by H. Lyman of the U. S. Weather Bureau showed a definite eastward migration of the storm area. Stations reporting dust in the air late on Thursday, May 10, were strung along the edge of the Plains region, through central South Dakota down into Oklahoma, and across the Great Lakes region, with the eastern boundary along the coast of the Appalachians. By Friday, May 11, the westernmost stations reporting dust were along the line of the Missouri river; but there had been a great southward extension into Texas, and the eastern boundary had moved from the Appalachians to the sea, as far south as the Carolina capes, thence curving inland to Spartansburg, S. C., and Macon, Ga.

It is worth noting that the westernmost Weather Bureau stations reporting blown dust were about on the line where grazing and small-grain crops give way to corn and cotton—the "clean cultivation" crops, which require constant plowing, keeping the soil always loose. With a series of high winds following a desperately droughty winter, this loose-plowed soil was ripe for just what happened.

The consequences can be exceedingly serious for farming, beyond the widespread destruction of winter wheat. A dust storm requires wind-erosion of the surface of farms supplying the material, and this erosion can be almost as mischievous as the water-erosion that has been causing so much concern of late.

Wide areas of the United States, and even wider areas elsewhere in the world, are buried under great masses of wind-carried soil, deposited many thousands of years ago, probably not long after the end of the Ice Age. This type of soil is called "loess." Quite typical deposits of loess form the great bluffs extending all along the western boundary of Iowa, and forming the fertile cultivated soil far inland. The recent dust storm was only a feeble sample of the weather that must have been "usual" a hundred thousand years or so ago.

Although the dust that filled the air over the eastern half of the country had a most alarming appearance, there is little danger of widespread injury to health. In the West, where the particles are relatively large and coarse, there may have been a certain amount of nose and throat irritation. But this is only a temporary condition.

Studies by the U. S. Public Health Service indicate that real dust injury results only in such occupations as sand-blasting, where workers are exposed to atmosphere thick with gritty particles of free silica every day for years on end. Injury of this kind can hardly be expected to result from a single dust storm, no matter how extensive.

The same may be said about plant life. Except where the plants are literally blown out of the soil, as winter wheat has been, or buried under it when it comes down again, not much harm is expected by botanists and agricultural scientists.

Oak pollen made up a really respectable percentage of the dust that fell in the Chicago area during the dust storm, O. C. Durham, chief botanist of the Abbott Laboratories at North Chicago, Ill., discovered when he examined collecting slides exposed during the disturbance. Mr. Durham's calculations indicate a fall of some 34.7 tons of dirt per square mile, and during the same time a fall of about 34 lbs. of oak pollen per square mile.

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A HAT'S ANCESTRAL TREE

Most of us think of the Panama hat as being made of palm leaves, but it is no more a palm-leaf hat than it is unique to the Republic of Panama. It is made from the rather palm-like leaves of a distant cousin of the familiar Jack-in-the-Pulpit, calla lily and caladium. It grows throughout Central America and northern South America, especially in Ecuador and Peru, and its botanical name is *Carludovica palmata*. A life-like reproduction of a typical specimen has just been placed on display in the Field Museum.

## MEDICINE

## Cod Liver Oil Now Used as Wound Dressing

**C**OD LIVER OIL, best known for its ability to prevent or cure rickets in children and to hasten their slow convalescence from infectious diseases, has found a new use as a dressing for wounds. This new use for the familiar oil was discovered by the German Prof. Löhr as a result of three years of experimenting with thousands of cases at a hospital in Magdeburg.

Combined with other fats to make a semi-solid ointment, cod liver oil speeds up the healing of wounds, apparently giving just that fillip that makes all the difference between sluggish and quick recovery.

Whether or not the speedier healing is a result of the high concentration of vitamin A and D in the oil Prof. Löhr does not know, though he considers it a possibility. He says the new ointment is no panacea and should not be used indiscriminately. He uses it in selected cases, pasting onto wounds, sores and ulcers a layer so thick that the overlying dressings do not come into contact with the raw, tender surfaces of the wound, thus eliminating pain when the dressings are changed.

Science News Letter, May 19, 1934



## MEDICINE

# Exposure to Germs Fails To Cause Colds in Volunteers

Normal Men Stay in Air Conditioned Room With Sneezing Patient and Remain Well In This Ideal Environment

**C**ATCHING COLD is not just a matter of getting the "germs" or virus of a cold into your system. Getting chilled or being tired may be a big factor. This is the opinion of Dr. William J. Kerr, professor of medicine at the University of California Medical School. In experiments, he exposed human volunteers in an air conditioned room to a sniffing, sneezing person.

Under certain conditions, you can share a drinking glass with a cold sufferer, and even sit within sneezing range of him for hours at a time and still fail to catch a cold. This was the experience of twenty-four volunteers who took part in experiments which Dr. Kerr and Dr. John B. Lagen, research associate, have been conducting for the past two years at University of California Hospital.

Dr. Kerr admits that a strong case has been made for a filterable virus being the causative factor of common colds, but he is not satisfied that this is the only causative factor. Failure of the body to adapt itself to changes in the environment is probably another factor that is responsible for your catching cold.

"If a filterable virus is the cause, the environmental factors and the general bodily responses must still be considered in the preparation of the soil," Dr. Kerr suggested.

He hopes that his studies on how colds are transmitted from one person to another will throw some light on the adaptive mechanisms of the body which help to keep us healthy and about which little is known.

The experiments to test the effect of environment were carried out in a specially constructed air-conditioned room. It was completely isolated from the outside and washed and prepared air was supplied to it. The room was kept with conditions to insure the complete comfort of the volunteers who lived in it, four at a time. The temperature was between 70 and 71 degrees Fahrenheit with a relative humidity of 55 and an air flow of approximately 66 cubic feet

per minute. Barometric pressures showed a very slight increase over those in the outside atmosphere because of the constant flow of air into the room.

The volunteers who served as guinea pigs for the experiment were all normal men between the ages of 21 and 40. They gave a history of three or more colds a year, none of them having had a cold within recent weeks.

After they had been in the room from five to eight days, they were joined by another man but one who was suffering from a common cold in its early stages. This cold sufferer stayed in the

room for one or two days, coming into closest contact with the men who had no colds. They all drank from the same glass, sat around a table playing games, and the cold sufferer sneezed unrestrainedly, filling the air with droplets presumably full of cold virus.

Besides being exposed in this way to colds, some of the volunteers had secretions from other cold sufferers swabbed onto the insides of their eyelids. Neither these nor any of the other volunteers caught cold or had any symptoms of colds.

Dr. Kerr and his associate do not think that these experiments have settled the question. They believe these studies show that colds are not so easily caught when your body is in a comfortable environment. They suggest that environmental changes, particularly sudden changes in the weather or in resistance other than the type developed by vaccination, for example, allow disease germs or viruses to become active, giving the symptoms of a cold.

*Science News Letter, May 19, 1934*

## COSMOLOGY

# Our Cosmic Island Shaped Like Ball, Not Like Disk

**W**E LIVE in a great ball of stars and not in a watch-shaped stellar galaxy as astronomers have supposed. Dr. Harlow Shapley, Director of Harvard College Observatory, delivering the Darwin lecture in London, said there is now increasing evidence that some types of stars are so distributed as to make the Milky Way galaxy nearly spherical.

Our neighbor galaxy, the great nebula in Andromeda, is also a great ball of stars. As in our own Milky Way, the greatest portion of Andromeda stars fall into an elongated flattened spiral form with long diameter about four times the short diameter. When Harvard astronomers made measurements along the lesser axis with an instrument sensitive to very fine differences in light it was found to be about five times as long as previously shown on photographs made with large telescopes.

Ideas of the sizes of our own and other galaxies of stars must be revised upward, Dr. Shapley told the British audience. The dimensions of spiral nebulae must be increased by six-tenths,

and for other nebulae that look like great balls the dimensions must be tripled. It is now known that it takes light at least 75,000 years to cross our Milky Way.

Some 115,000 new galaxies were discovered on photographs made at Harvard's South African Station and at its new Oak Ridge, Mass., observing point. The most recent photographic plate taken, exposed three hours through the 16-inch Metcalf telescope, showed 1,700 galaxies, the richest region yet discovered during the extensive Harvard survey of northern skies for new "universes." Great clusterings of galaxies, each consisting of tens of thousands of galaxies and each measuring a thousand quintillion miles across, have been found, Dr. Shapley said, as a result of his inquiries into how the galaxies are distributed in the universe.

Dr. Shapley's address was made on the occasion of his receiving the gold medal of the Royal Astronomical Society, one of the highest honors paid astronomers.

*Science News Letter, May 19, 1934*



#### DISINTERMENT OF A GIANT

Exhibits of giant sloths, great lumbering beasts that lived in the Americas up till a few thousand years ago, are becoming fairly common in museums. The Field Museum in Chicago, however, has a sloth exhibit that is really unique. It not only displays the huge skeleton itself, but also reproduces exactly the washed gully-side in which it was found, only a few feet under the grass roots. Exhibits of this kind will be very useful in giving the public some notion of what paleontologists must contend with, before the "restored" skeleton, all nicely put together, can be proudly erected on its iron frame.

#### PHYSICS

## With Electron Microscopes We May Observe the Unseen

Electrons Have Wavelengths Like Light But About One Thousandth That of Ultraviolet, Physicist Explains

**B**Y USING electrons, particles of electricity, instead of light there is the possibility of building microscopes that will "see" minute objects several thousandths of the smallest size that can possibly be viewed by means of light detectable by our eyes.

The development of electron optics is one of the important achievements of modern physics. In this country and abroad considerable success has been achieved in using magnetic and electric fields in vacuums to bring to a focus electrons in much the same way that mirrors and lenses are used to reflect and refract light.

Dr. C. J. Davisson of the Bell Telephone Laboratories, New York, is a pioneer in this work. In a statement prepared for Science Service and broadcast over the Columbia Broadcasting System he gives one reason why scientists are going to the trouble of building intricate apparatus for producing electron images when perfectly good light images can be produced so much more easily.

"The highest magnifying power

worked with microscopes is about 3500," Dr. Davisson explained. "This isn't because microscopes of higher magnifying power can not be made. We could just put one microscope above another if we liked and have a magnifying power of 3500 times 3500.

"Why isn't this done? It is a matter of resolution. The light from a point in the field of the microscope—it appears as a spot—a very small spot but nevertheless a spot. So that two points in the object, if they are very close together, will produce two spots which overlap and so appear to the observer as one spot. The points in the object are not resolved, as we say, in the field of the microscope. And if we added a second microscope to the first they wouldn't be any better resolved in the field of the second—they wouldn't be as well resolved, in fact. Now the size of these spots, and so the resolving power of the microscope, are determined in part by the wavelength of the light. The greater the wavelength the larger the spot and the lower the resolving power.

"This is why some microscopes are made to operate with ultraviolet light; the wavelength is less and the resolving power higher. Now electrons, strangely enough, have wavelengths like light—only they are very much less—of the order of one one-thousandth that of ultraviolet light. The situation is then that the ultimate limit of resolving power for an electron microscope is about a thousand times higher than for a light microscope.

"We are a long way from attaining this limit but we are on our way."

*Science News Letter, May 19, 1934*

#### PHYSIOLOGY-AVIATION

## Aviators Need Carbon Dioxide at High Altitudes

**A**VIATORS need to take along carbon dioxide gas as well as oxygen when they fly at high altitudes, it appears from studies carried on at the Eppendorfer Hospital, Hamburg, Germany, by Prof. Hans Winterstein of the University of Istanbul.

The chief effects of high altitude are increase in the pulse rate, in the breathing rate, in the blood pressure, and enlargement of the heart; a decrease in capacity for exertion; and a decrease in the carbon dioxide in the blood which causes a subdued breathing. This last effect continues for some time after the normal air pressure is reestablished.

Of all these, only the high pulse rate and fast breathing are due to lack of oxygen, Prof. Winterstein found. They alone were eliminated when the oxygen supply was increased without increasing the atmospheric pressure.

Prof. Winterstein therefore concludes that the lack of carbon dioxide, while not the cause of all the symptoms experienced at high altitudes, is nevertheless an important factor that should not be neglected.

His experiments were carried out with a compartment specially constructed inside another compartment so that the composition of the air in the inner compartment could be changed in any desired way without changing the air pressure inside this compartment. The studies have just been reported to the German scientific publication, *Forschungen und Fortschritte*.

*Science News Letter, May 19, 1934*

The Smithsonian Institution has placed on exhibit one of the first automobile self-starters, a huge affair that cost \$350 when it was made in 1912.



EVOLUTION

# No Great Ape Was Your Ancestor

## Giants Do Not Produce Other Types of Giants; Evolution Of Man Must Have Been From Some Smaller Mammal

By DR. FRANK THONE

**N**EITHER GORILLA, nor chimpanzee, nor orang-utan, nor any other great ape of their size and kind was ever ancestor to man. So declares Gerit S. Miller, Jr., of the U. S. National Museum.

This dictum, in flat contradiction to the orthodox Darwinian thesis still stoutly adhered to by very many zoologists and anthropologists, calls for an equally stout defense. Mr. Miller is prepared to offer it.

The great apes, he says, are giants of their tribe, too big to become ancestors of man, who is also a giant but of a radically different type. Giants, he explains further, have never been shown to have begotten anything but creatures of their own kind; or at most they have become ancestors to other giants very much like themselves. Citing an evolutionary chain with fewer missing links than there are in man's, he calls attention to the fact that present-day elephants are descendants of other elephants of types now extinct, but they do not trace any part of their ancestry back to the mastodons, giant beasts like elephants but distinct from them, and having no modern descendants. Other lines of big animals whose evolutionary history is well established show the same thing: giants do not beget other kinds of giants. The great apes are too big to be our grandsires.

### Not Anti-Evolutionist

However, Mr. Miller wants it to be distinctly understood that in repudiating the great apes as ancestors he is not denying man's kinship to other mammals. He has not turned anti-evolutionist. He still holds that man's relations, "according to the flesh," are to be sought among the primates, or lemur-monkey-ape order of animals, where evolutionists of all colors of opinion have always placed them; where, indeed, the great Linnaeus, who was not an evolutionist, classified man himself. But he would seek man's direct ancestry among smaller extinct creatures in this

order rather than among the limited group of great apes, highly specialized along different lines from those of his own development.

The idea that man is a giant may come as a surprise, but if we take a look through the monkey house in the zoo, or through a reasonably complete zoology book, we see at once that it is so. The great bulk of the hundreds of primate species—monkeys, apes and kindred animals—are much smaller than we are. They are of sizes that range, as Mr. Miller puts it, between that of squirrels to that of bird dogs, of a dozen or two that are somewhat larger, and of four whose great bulk makes them wholly exceptional,—gorilla, orang, chimpanzee and man.

### Man is Tallest

And even among these four "giants" of his miscellaneous kinship, man takes foremost rank in at least one respect. He is the tallest. Six-footers are not uncommon among men, and seven- or even eight-footers, though rare, are not unknown. Six-footers among the great apes must be excessively rare. There have been some monsters reported among them, but authentically recorded specimens of gorillas and orang-utans all fall short of a tall man's height.

This is mainly because of their relatively short, bandy legs, for their bodies are long, and often terrifically bulky. One well-measured gorilla five feet seven and one-half inches tall weighed 360 pounds, and not nearly as large a proportion of his weight went into legs as would be the case in a man.

One thing that has undoubtedly helped in getting apes a reputation for being taller than they are is their relatively enormous arm length. Former heavyweight champion Jack Dempsey was sometimes called a "gorilla" by sports writers because he had a 74-inch reach, yet a real gorilla 5½ inches shorter than he is had a reach of 97 inches! An ape like this with its legs imperfectly seen in the underbrush but waving its great arms in the air, would undoubtedly add several cubits to its

stature in the mind of an awed and imaginative traveler.

But regardless of which of the big primates can claim the honors of being the biggest, it is undoubtedly true that we are all giants together, and that the organ-grinder's monkey, not much larger than an ordinary cat, comes closer to being an "average" specimen of the great mammalian order to which we all belong.

### Anthropoids Not All Giants

In excluding the great apes from man's ancestry, Mr. Miller makes it specifically clear that he does not mean all the anthropoids, or man-like apes. From his exception he excuses the gibbons, which are small anthropoids of southeastern Asia and the East Indies. These are most obviously not giants, for the average weight of grown-up animals is only about ten pounds—just the weight of a big new-born human baby.

Yet even so, Mr. Miller emphatically disclaims any implication that gibbons are ancestral to human beings. The existing and known fossil gibbons are highly specialized tree dwellers, with enormously elongate arms and hook-like hands and relatively short legs. Man is specialized in exactly the opposite direction, with all the work of getting about delegated to his long, ground-adapted lower limbs and his arms only moderately developed. So the gibbon as we know him could hardly have been ancestral to man on this one count alone.

The whole point is, Mr. Miller says, that we simply do not have enough fossil material as yet to build any kind of a reasonably solid bridge between man and any specific line of primates. All the factual evidence points backward to some such connection, but it does not point definitely enough to justify us in saying just where that connection was, or when it existed.

Mr. Miller's unwillingness to accept a verdict based on insufficient fossil evidence is not limited to the scanty fossil remains of extinct species of great apes. He is even more skeptical about two of the most famous skulls usually classified as primitively human, the Ape-Man of Java and the Dawn-Man of Pildown, England. Both of these have been hailed as undoubtedly human by some

scientists, restorations have been built around their fragments and are now on view in the biggest museums, and lengthy discourses on the positions of these two extinct human or humanoid species have been spoken in scientific meetings and printed in the literature of science.

All this, Mr. Miller is convinced, is most unseemly and premature. In the first place, he points out, there is only one specimen of each kind,—a very imperfect specimen at that. But it is well known to all anthropologists that the skeletons of both man and the great apes vary so much from individual to individual that we must have many complete specimens before we can safely venture on drawing general conclusions. The great differences that can exist even between brothers are proverbial. Yet many scientists have not hesitated to base the most sweeping generalizations on single imperfect specimens when it comes to early man. Mr. Miller feels that they should resist this impulse, entirely natural though it may be, and patiently hunt for more material before they try to tell us all about *Pithecanthropus* or *Eoanthropus*, or set up their statues in museums.

Furthermore, he continues, skull tops are not at all the most important things to have as bases for the reconstruction of fossil species, whether human or ape. Skull-tops of large apes can be astonishingly human in their outlines. Neither do teeth help greatly, especially molar teeth. It is almost impossible to distinguish with certainty between some ape teeth and some teeth from human jaws.

### Over-Sanguine?

The thigh-bone of the Java Ape-man is undoubtedly human; but is it really the thigh-bone of the Java Ape-Man? It was found at some distance from the skull, and there is a definite possibility that the two bones did not come from the same creature at all. Similarly, the strongly ape-like lower jaw usually associated with the skull of the Dawn-Man of Piltdown, England, may not have belonged to that skull at all. In calling attention to these possibilities, Mr. Miller is only raising anew the objections that other scientists have advanced in the past to what they have regarded as the over-sanguine views of their associates.

What we really need to establish the nature of these doubted skulls, Mr. Miller holds, is their basal portions. These would tell us decisively how man-like

or how ape-like the two early human or pre-human races were. One of the things that sets man and the apes most sharply apart is the position of the big hole in the base of the skull through which the spinal cord passes. In man, this opening is well forward, and the skull balances on the end of the spinal column like a basket of laundry on a Negro wash-lady's head. In all the apes and monkeys, on the other hand, the opening is away aft, and the skull does not balance, but juts forward and is held up by the pull of powerful muscles in the back of the neck and on the shoulders. Until we can find the bases of the skulls of Ape-Man and of Dawn-Man, we shall not know definitely their places in the animal kingdom.

### Pelvis Also Important

Another bone, or group of bones, necessary for establishing the correct zoological status of any supposedly human fossil, according to Mr. Miller, is the pelvis. This is the irregular ring of bone at the base of the trunk, attached to the spine and in turn serving as attachment-point for the legs and as partial support for the vital organs in the abdomen. In upright-walking man, the legs are extended in the same direction as the spine itself, instead of being at right angles to it as in the ancestral quadruped pattern; and it is to give efficient leverage to the leg muscles in this new and "unnatural" position that

the pelvis has had to become profoundly modified. Furthermore, since it now has to bear all of the body weight instead of only half of it, as in the quadrupeds, it must be solidly constructed. In the apes and monkeys it is narrower and not so rigidly built, because these animals are not primarily leg-walkers. Even the least arboreal of them goes on all fours more than he does on his hind legs. For these and other reasons, there is a great difference between the pelvic bone structure of man and the apes, which no anatomist could escape noticing. So Mr. Miller demands, not the head of primitive man, but his pelvis.

There is a third striking difference between man and all the apes, though Mr. Miller stresses this rather less than he does the skull-base and pelvis differences. This is the position of the big toe. Man's foot is built for walking on flat surfaces, and the big toe is its principal lifting lever for the last thrust of each step. It is in the position of greatest efficiency for delivering that thrust—pointing straight forward. The feet of apes, on the contrary, are climbing feet, and their big toes are their principal grasping organs, pointing sidewise at a considerable angle. Even when he is walking erect the ape is unable to line up his big toe; it continues to point sidewise.

Until paleontologists are able to dig up the bases of the earliest skulls and the pelvises that go with them, therefore, Mr. Miller believes students of evolution should venture opinions only very conservatively. And he'd like to have a few big toes as well.

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Science News Letter, May 19, 1934

### MEDICINE

## Lower Tuberculosis Deathrate For 1934

A LARGE reduction in the tuberculosis deathrate during 1934 is foreseen by statisticians of the Metropolitan Life Insurance Company who have been studying the mortality figures for the first quarter of the year. They expect the deathrate from this disease among the industrial population to run about 60 per 100,000 for this year. For the first quarter of the year the rate among insured white persons was 51.2 per 100,000, a "remarkably low figure."

Science News Letter, May 19, 1934



### MIGHT BE IN VAUDEVILLE

The long-nosed monkeys are of "average" size for primates, and have faces like human caricatures



## PSYCHOLOGY

**Flirtation is Called Safety Valve**

**S**Ocial flirtation can serve as a safety valve for real infidelity. The man who is jealous of his wife's flirtation with another man fails to realize this, psychiatrists declare.

"Conventional experience teaches us that such little ventures in the direction of infidelity are not to be held against either party," stated the New York psychiatrist, Dr. A. A. Brill, in presenting cases of abnormal jealousy before the American Psychiatric Association.

"In most cases it actually happens that the inflamed passion, fanned by a strange love object, finds gratification in a sort of turning back to fidelity at home," he added.

In this type of jealousy which psychiatrists term projection jealousy the man projects his own impulses to disloyalty to his wife. By accusing or suspecting her of infidelity, he unconsciously relieves his own conscience of blame for actual unfaithfulness or for impulses toward it which have been repressed but nevertheless worry him.

Prof. Sigmund Freud pointed out that social conventions wisely grant some leeway to the married woman's desire to attract and to the married man's desire to conquer. The expectation is that the indisputable tendency to infidelity will thereby be drained and rendered harmless.

*Science News Letter, May 19, 1934*

## RADIO

**Rain May Interfere With Ultra Short Wave Radio**

**F**OG and rain will prevent the development of a reliable wartime or commercial radio communication system with ultra-short waves less than ten centimeters long, Prof. Gennady W. Potapenko, California Institute of Technology physicist, predicted.

Short waves of this length or less can be transmitted in clear weather, he said. However, their absorption during inclement weather makes them unreliable for commercial purposes.

Based on data compiled on charts, Prof. Potapenko made the forecast that rain and fog would absorb all waves from ten centimeters to the infrared waves of about 100 microns in length.

"Therefore," he added, "in order to avoid atmosphere absorption by fog and rain, one must use waves either longer than ten centimeters, or shorter than 100 microns."

Recently it was revealed that Prof. Potapenko's short wave tube system, published during 1929 in Germany, is being used by the International Telephone and Telegraph Laboratories in England to transmit 15 centimeter waves in a direct beam across the English channel between two 12-foot metallic mirrors.

That tube system, developed for making magnetic and electric measurements, now is obsolete as far as Prof. Potapenko's research is concerned. At present he uses three-centimeter waves.

In the channel experiments of transmitting telegraphic and telephonic communications, less than one hundredth the power needed to illuminate an ordinary household electric bulb was required to send the waves 38.2 miles. The antenna used was less than one inch long.

The advantage of ultra-short wave communications, Prof. Potapenko stated, lies in the fact that messages can be concentrated in a beam.

*Science News Letter, May 19, 1934*

## ENGINEERING

**Robot Counts Autos; Ignores Pedestrians**

**E**LECTRIC EYES now count and record each automobile that enters the grounds of the Massachusetts Institute of Technology, Cambridge, Mass., but students rushing to class or other persons passing by are ignored by this robot sentinel.

Two light beams several feet apart are focused on two photo-sensitive cells and a counting relay registers every time the two beams are both interrupted by the passing of a large object such as an automobile.

Pedestrians shield but one light at a time and hence are not counted.

The device will be of practical interest for checking traffic over toll bridges or highways.

A slight change permits the electric eyes to measure the speed of cars by noting the very small time interval between the interruption of the two light beams a few feet apart as the speeding car passes by. A mechanism for measuring minute time intervals is connected with the electric eyes.

*Science News Letter, May 19, 1934*

**IN SCIENCE**

## PSYCHOLOGY

**Women Slower to Apply Brakes Than Are Men**

**W**OMEN, on the average, reacted more slowly than men in jamming on brakes to avoid hitting an automobile ahead of them when tested at the Massachusetts Institute of Technology.

For use in a CWA traffic study conducted by Charles W. Frank, M. I. T. graduate, an electrical measurer of the speed of response of men and women to visual and audible impulses was devised.

This device was used to measure the time interval between the instant of application of the brake in one car and the instant the operator in the car following notes the act and applies his brakes. The tests showed that the time consumed averages about six-tenths of a second for men and about eighth-tenths of a second for women if the cars are equipped with stop lights. For cars without stop lights the time is more than twice as long.

The reaction times measured include the mechanical and electrical lags in the lighting of the stop lights as well as the lag due to the driver and observer. The times obtained in the traffic studies are much larger than reaction times obtained when keys are pressed by individuals in response to a warning light or sound.

*Science News Letter, May 19, 1934*

## CHEMISTRY

**Harvard President Given Chemistry Medal**

**D**R. JAMES Bryant Conant, president of Harvard, has been awarded the annual American Institute of Chemists medal for outstanding service to American chemistry. His most important researches have been on the chemical structure of complicated organic compounds, among them the blood's haemoglobin, the green chlorophyll coloring of plants and other coloring substances in flowers and feathers.

*Science News Letter, May 19, 1934*



# NCE FIELDS

## SEISMOLOGY

## Earthquake After-Shocks Follow the Moon

FROM a study of many thousands of earthquake records, Dr. Charles Davidson, English seismologist, has found that the after-shocks that follow the main quake, and which can be followed by means of seismographs for many months after the people of the area affected have ceased to feel them, do not diminish in a continuous manner, but at regular intervals increase in frequency and intensity. He found three distinct cycles having average periods of 7.4, 14.7, and 29.3 days.

These are almost exactly a quarter, a half, and a whole lunation—the period from new moon to new moon, which has an average value of 29.53 days.

Dr. Davidson believes that the cycles are due to tidal action of the moon, which alternately lifts and depresses the earth's crust to a slight extent.

*Science News Letter, May 19, 1934*

## EVOLUTION

## "They Never Come Back" True of Bones in Evolution

"THEY NEVER come back." The old axiom of the sporting world applies to bones in evolving lines of animals as well. There has been, throughout the long history of vertebrate animal development, a steady tendency for the bones of the skull to become fewer and more specialized. The lessening in number of bones has been accomplished partly through sheer disappearance, partly through the fusion into one bone of two or more originally separate bone units.

At a joint meeting of the American Society of Mammalogists and the American Association of Physical Anthropologists, Prof. William K. Gregory of the American Museum of Natural History presented the results of an extensive study on the skulls of living and fossil animals, conducted jointly with Miss Marcelle Roigneau and a number of graduate students.

The basis of the dictum supported by

the researches of Prof. Gregory and his associates is what he calls "Williston's Law," a generalization that originated with the late Prof. S. W. Williston of the University of Chicago. Prof. Williston noted the much larger number of bones in the skulls of certain ancient reptiles, as compared with their modern successors and with the mammals, including man. Prof. Gregory has further extended Prof. Williston's generalization and tested its truth for the whole vertebrate animal group.

Among fishes, he found that the most primitive have as many as 180 skull bones, while higher forms have only about 100. The lowest members of the amphibia, or frog-toad-salamander group, had 90 to 95 bones in the skull; the higher modern ones, only 50. The earliest reptiles had skulls in some 80 pieces, while the most highly evolved modern ones, the snakes, possess 50-bone skulls.

The very strange reptiles that apparently started the mammalian line of development had something over 70 skull bones; the most primitive of mammals, the marsupials, have less than half that number; primates, which include monkeys and men, have about 30.

Primates are usually considered to be the highest of animals, and in most respects the claim is probably correct. But there are a few highly specialized animals outside this lordly group of ourselves and our next of kin that beat us at the skull-bone reduction game. Peccaries, which are little pig-like animals that live from Texas on southward into the American tropics, have their skulls so fused that they may be said to have only two bones apiece: the lower jaw, and the rest of the skull.

*Science News Letter, May 19, 1934*

## SEISMOLOGY

## Severe Earthquake Shakes Alaska

MAINLAND Alaska, near the head of Prince William Sound, felt a severe earthquake on May 3. Reports from seismological observatories collected by Science Service and interpreted by the U. S. Coast and Geodetic Survey gave an epicenter about 125 miles northeast of the coast city of Seward, not far from the small settlement of Chickaloon, on a branch of the Alaskan Railroad. The region is sparsely populated.

*Science News Letter, May 19, 1934*

## PALEONTOLOGY

## Platyhystrix Reconstructed At American Museum

A PREHISTORIC animal with a nearly flat body and head but with tall bony processes growing out of its backbone has just been pieced together from fossil fragments in the American Museum of Natural History by a visiting scientist, Dr. D. M. S. Watson, professor of zoology in the University of London.

In front view this bizarre creature would have looked like an inverted T. It is about two feet long and the "fin" along the back is nine or ten inches high. Its name is *Platyhystrix* and it belongs to a very ancient group of amphibia that crawled along the slimy pond bottoms of the Southwest 220,000,000 years ago.

Specimens with flat bodies and flat triangular heads like this one are well known from this period but the "fin" along the back is all wrong. So much so that when the late Prof. S. W. Williston of the University of Chicago first described this form several years ago, his fellow scientists would not accept his reconstruction.

Now Dr. Watson has proved he was right.

*Science News Letter, May 19, 1934*

## GENERAL SCIENCE

## Voices of Scientists Recorded For Future

INAUGURATING a plan to preserve for future generations on the campus the voices of distinguished persons connected with Cornell University, short addresses by Dr. William L. Bragg and Sir Arthur Stanley Eddington have just been recorded. The plan will result in a library of records which will eventually have historical significance, and Prof. Vladimir Karapetoff of the Cornell School of Electrical Engineering has volunteered to make the records on his high-fidelity voice-recording equipment perfected after several years of experimenting.

Dr. Bragg, professor of physics at Manchester (England) University and lecturer this term at Cornell, outlined the work which led to his receiving the Nobel Prize. Sir Arthur Eddington, the British astronomer lecturing at Cornell, read a passage from one of his books.

*Science News Letter, May 19, 1934*

## New Books for Scientists

### PLANT PARASITIC NEMATODES: and the Diseases They Cause

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## MEDICINE

# Surgery May Save Human Race From Extinction

## Evolutionary Trend Toward Neuter Race May Be Checked By Gland Operation

IS THE HUMAN race passing toward extinction by the evolution of a neuter race? Studies of cases of glandular disorder have led Dr. L. R. Broster, surgeon to the Charing Cross Hospital, London, to suggest this possibility.

If this is the case, for the first time in the history of the world a race may be able to check the processes of evolution and save itself from extinction. Modern medical and surgical science may have provided man with the means of saving himself from the fate of the great auk and the dinosaur, the British surgeon's studies show.

Twelve women suffering from virilism which gave them the appearance of men, like the bearded ladies of the circus side-show, were restored to normal feminine appearance, functions and feelings by removal of one of the adrenal glands, Dr. Broster reported to the *Lancet*.

### Like Cocked Hats

The adrenal glands are small, cocked-hat shaped organs perched one atop each kidney. They have two parts, a medulla from which is obtained the important medicine, adrenalin, and a cortex which is essential to life. A relation between the adrenal glands and the sex glands has already been known to scientists and tumors of the adrenal cortex are known to hasten sexual development so that children suffering from them become sexually adult long before they reach their teens.

The unfortunate women who develop deep voices, beards, masculine figures and even masculine psychological states owe their condition of virilism to a change in the structure of the adrenal cortex, Dr. Broster found. He believes the condition is not a disease but a definite deviation from the normal evolutionary process, and is not confined to man alone. It has been observed in some of the lower animals.

The condition seems to be hereditary and women suffering from it have few children. Its appearance in the human race is a backward movement since it

tends toward an intersex type between male and female. It may be stationary, receding or increasing. If it is increasing, Dr. Broster says we "may be the innocent spectators of an evolutionary process drifting slowly and inevitably into the neuter state." The result of such a drift would seem to be extinction unless humanity develops an asexual method of reproducing itself.

### Surgery a Preventive

Yet this fate may be averted by surgical means, it appears from the good results which Dr. Broster reported in his series of cases.

The condition may develop very early in life, before the child has begun to show masculine or feminine sexual characteristics, or it may develop after these characteristics have appeared.

In the latter case, even though the change toward virilism has become marked, removal of one adrenal gland restores the patient to a normal feminine state. The masculine growth of hair falls out soon after operation, normal feminine functions reappear and the patient's outlook is much improved. One of Dr. Broster's patients subsequently married and gave birth to a son.

Virilism that develops before the time for sexual maturity cannot be remedied by removal of an adrenal gland, Dr. Broster reported. However, if this condition could be detected early, before the child has reached puberty, operation might be effective.

This strange condition develops as a result of the close relation between the adrenal cortex and sex glands, Dr. Broster explained. Both adrenal cortex and sex glands develop from the same group of cells known as the genital ridge.

During the early stages of pre-birth development and just a few weeks after the baby's sex is determined the adrenal cortex contains some masculine element, possibly the male sex hormone itself, Dr. Broster's studies indicated. This normally disappears in another few

weeks, disappearing faster in girl babies than in boy babies.

Failure of this masculine element to disappear from the adrenal cortex fast enough or at the normal time may be responsible for the development of virilism in the girl later on, he suggests.

Probably its disappearance is due to the action of some other sex-controlling gland such as the pituitary, and failure of the mechanism that maintains proper balance between the glands may be the actual cause of virilism.

*Science News Letter, May 19, 1934*

#### PSYCHOLOGY

## Right-Handed Rats Made "Southpaws" by Brain Lesions

**N**EW evidence that an injury on the left side of a right-handed person's brain may make him left-handed although leaving his vision undisturbed, was found by S. A. Kirk, a graduate student at the University of Michigan in experiments with rats.

Rats, as well as human beings, are right or left-handed, and Mr. Kirk began his experiments by testing the hand or paw preference of his rats.

The rats were forced to reach for their food from a narrow dish into which they could not insert their mouths, but could use either of their paws. Having determined whether the rats were right or left-handed, a brain lesion was made in the hemisphere opposite the preferred hand. In the majority of cases such lesions caused a change in handedness of the rats. In other words, a right-handed rat could be made left-handed, and vice-versa.

Effects of brain lesions on man's ability to think, read, write, or speak have puzzled psychologists for years. From observations on men who have had brain lesions as a result of accidents, operations or war injuries, a theory has been evolved which asserts that a lesion on the left hemisphere of the brain of a right-handed person, or a lesion on the right hemisphere of a left-handed person will result in changes in the ability to think, read, speak or write.

#### Reversing Letters

The possibility that the inclination shown by many children to reverse their handwriting and to read backwards, confusing letters such as b and d, might be determined by interference with the normal dominance of one brain hemisphere, was tested by another of Mr. Kirk's experiments.

He caused the rats to jump from a stand to one of two windows in order to get to their food. One window was latched and the other unlatched. If the

rat jumped at the correct window, which had a letter "F" on it, he got through to his food, but if he jumped at the wrong window, with a mirrored or reversed "F" on it, he bumped his nose and fell into a net. The letters were alternated irregularly and the rats learned to jump to the correct form.

#### Does Not Control Vision

According to the theory of brain-dominance, an injury on the left hemisphere of a right-handed rat should result in a loss of the ability to discriminate between visual patterns, whereas an injury in the non-dominant hemisphere should not disturb the function. Preliminary investigations indicate that there is some evidence that the dominance of one brain hemisphere controls handedness in a rat but that very little evidence is found for such control of the visual function.

Mr. Kirk explained that a rat's bodily response to a visual form is somewhat analogous to child's motor response to a letter or word. The experiment is being continued.

*Science News Letter, May 19, 1934*

#### PHYSICS

## Find Diamonds Transparent To Ultraviolet Light

**S**TRANGE diamonds that are transparent to invisible light have been discovered by the British scientists, Sir Robert Robertson, Dr. J. J. Fox and Dr. A. E. Martin, in the course of a physical examination of 300 diamonds, water-white, uncut and originating in both South Africa and Brazil.

Five out of the lot were transparent to infrared and ultraviolet invisible light to which ordinary diamonds are opaque.

To the eye, the "transparent" diamonds, as the experimenters called them, do not differ markedly from the

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ordinary type. X-ray analysis and electron diffraction showed that the main crystal structure is the same in both. The difference must be due, the experimenters concluded, to the secondary structure, which Dr. Fritz Zwicky of Pasadena has shown may profoundly affect many physical properties of crystals. Close examination revealed a series of fine striae on one face of the transparent type, spaced from 4 to 40 hundred-thousandths of an inch apart. These were found to be the edges of layers that extended through the crystal. It is believed that they were produced by pressure.

Many other properties of these rare stones besides their transparency to invisible light were investigated in a very extensive research. In most properties

they differed but little from ordinary diamonds. They exhibited, however, marked photo-electric effects, which in ordinary diamonds are very feeble. They produced an electric current under the action of light without the help of a battery, a property possessed also by a few other substances, notably selenium.

A search of the literature revealed that laminated diamonds had been observed a number of times before. Robert Boyle, as early as 1772, described a diamond which he had set in a ring, and which he described as "consisting of several plates having their edges distinguishable like those of a book a little opened." Never before, however, have the physical properties of these stones been so thoroughly and exhaustively investigated.

*Science News Letter, May 19, 1934*

#### CHILD CARE

## Training of Deaf Child Should Be Started Earlier

**H**ERE is another forgotten class in our modern world.

This one, as a matter of variety, is not suffering primarily from economic depression. It is a class found to be suffering from sentimentality and lack of common-sense information. It is a class that does not know it is being neglected until years after the damage is done.

In short, the forgotten deaf child, with his bright face and aloof, shut-in ways, is called to the public's attention.

There are no figures to show the annual number of babies born deaf or who become deaf before they learn to speak. These handicapped infants are so widely and thinly scattered through the masses of population that they make no great show. But educators who see the steady flow of deaf children into schools and institutions are convinced that the birthrate of deaf babies must be considerable, and that there is acute need of reaching the parents with information about training them.

The Volta Bureau for the deaf, established in Washington by Alexander Graham Bell, is campaigning actively to reach these parents with information.

When young parents discover that their baby does not hear all the things they are saying happily to him, they are shocked at what seems to them a family disaster. The Volta Bureau finds

that, in their dismay, parents usually turn to the family physician for counsel. If the physician is not informed on the specialized work of educating the deaf, he gives what seems to him common-sense advice: That is, he says nothing can be done until the child is of school age, and is ready for a school for the deaf. Sometimes, a soft-hearted physician tries to soften the sudden blow for the anxious parents by saying that perhaps the child will outgrow his deafness, regardless of the fact that this rarely if ever occurs.

Advice of this sort, meant to be reassuring, is definitely harmful to the interests of the person most concerned—the deaf baby—emphasizes the Volta Bureau. Any intelligent mother can give a deaf child valuable training in the preschool years, if his mind is sound. With her home teaching and whatever facilities her community offers for teaching and treating a deaf baby, the little "shut-in" may go a long way toward becoming part of the social world. Among the beginnings that can be made, the Volta Bureau mentions:

1. The very young child may begin to read the lips of others, to understand what they are saying.
2. Whatever dormant hearing he has may be stimulated, thus salvaging it. Even a remnant of hearing is infinitely valuable.

3. Normal voice quality may be cultivated by encouraging the child to laugh naturally aloud and to babble as children do, in a voice not too loud. Teaching the deaf child to speak is usually best left to trained teachers, lest wrong sounds become fixed habits.

4. Though the mother cannot do much to teach the child to speak, she may start him at reading and writing.

*Science News Letter, May 19, 1934*

#### PSYCHOLOGY

## New Test Predicts Engineering Ability

**T**HE BOY who has his heart set on being an engineer may now be able to find out whether he has a gift for engineering, before spending long years of college preparation.

New scientific tests which measure aptitudes for engineering were described before the Midwestern Psychological Association meeting. Prof. Clair V. Mann of the Missouri School of Mines and Metallurgy is author of the tests.

The tests are designed to appraise a freshman's possession of qualities actually used in engineering such as coordination of hand and eye, visual perception of spatial relationships, and form discrimination.

*Science News Letter, May 19, 1934*

#### METEOROLOGY—AVIATION

## Chemical From Wells Makes Ship of the Sky

See Front Cover

**P**ICTURED on the front cover of this week's SCIENCE NEWS LETTER is the metal sphere in which Major William E. Kepner and Captain Albert W. Stevens, Army balloonists will attempt to soar to new stratosphere heights under auspices of the National Geographic Society.

The gondola is made from an alloy, of which 95 per cent. is pure magnesium, a chemical recovered from the brine of oil wells. Aluminum is half again as heavy as this alloy and steel would be nearly four and a half times as heavy. The extreme lightness, accompanied as it is with strength, will give the stratospherists a decided advantage.

The man at the left is peering from one of the two manholes—a worker is preparing the other. The covers of these manholes will be released on parachutes to slow the balloon's descent when breathable atmosphere is reached.

*Science News Letter, May 19, 1934*

## PSYCHOLOGY

# Would You Join A Riotous Lynching Mob?

The Chances Are One in Ten That You Would But Fake Kidnaping Shows You Are Not Likely to Be Indifferent

**F**AKING a kidnaping in order to study mob behavior—this is the timely scientific feat staged recently by three psychologists from the University of Iowa.

What they discovered about a peaceful crowd when it is roused by a harrowing report of local crime was announced before the Midwestern Psychological Association. The psychologists who engineered the test are Prof. N. C. Meier, G. Mennenga, and H. J. Stoltz.

The average man of education is not likely to join a mob, angry and indignant as he may feel. This was the most striking revelation in the experiment. Only about one man in ten made ready to leap into action on hearing that a mob was gathering for vengeance at the police station.

The fake kidnaping was tried out on several assemblages of college students. The man who rushed in with the kidnaping news and the rumor of a mob gathering for quick justice was a realistic actor, and practically every one was deceived, Prof. Meier said.

The type of personality that you are is no guide to your behavior in such circumstances, it appears from this experiment. Although personality traits in every degree were included in the students, no trait could be discovered to link with disposition to take part in mob action, or to avoid it, Prof. Meier found.

Over 200 students recorded on scientific forms, given out to them when the excitement was at its height, just what line of action they were about to take. The alternatives were: active part, minor part, spectator role, deter mob, or not to join.

From study of the experiment, the psychologist reported these probabilities of what a crowd will do, at least an educated crowd:

Even though provocation is strong, two persons in ten would try to stop mob violence.

One in ten will participate.

Three in ten would go along as spectators.

Four in ten would stay away.

The likelihood of a suspect's guilt would draw a larger percentage of people to mob violence than a situation where guilt was doubtful. With absolute certainty of confession by a suspect, one person in three would be likely to go with a mob.

Tests of the students, to see whether

## ▼ R A D I O ▲

### NUCLEUS AND COSMOS

an address by

Dr. H. A. Barton

Director of the American  
Institute of Physics

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neurotic tendencies affected their attitude towards mob violence, revealed nothing significant.

*Science News Letter, May 19, 1934*

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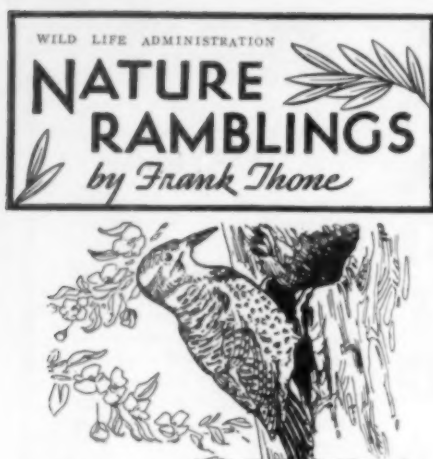
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### Woodman, Spare That Dead Tree!

**W**HEN YOU are riding or walking (quietly, if you want to see them!) along the trails of national parks or forests, birds are surely among the things you most desire to see. And dead trees—"old snags, eyesores"—probably among the things you wish you did not have to look at. Why don't the rangers chop them all down, get them out of the way?

To some extent, these two entirely natural desires are mutually contradictory, George M. Wright of the National Park Service points out, in a communication to *The Condor*, a journal devoted to the study of bird life in the West. Some of the most interesting birds demand dead timber for nests or feeding-places, and will vacate the neighborhood if all the defunct trees are removed. This is true of several species of owls and woodpeckers, as well as some kinds of swallows, blue-birds, nuthatches and chickadees. And lofty trees with leafless crowns are preferred as nesting sites by vultures and some of

the hawks, as well as band-tailed pigeons and a number of other birds. Even the proud bald eagle nests in leafless treetops in lowlands where its traditional towering crags are not available. Indeed, it is not unlikely that more bald eagles live in dead or half-dead trees than on the more poetic remote rocks of mountainsides.

The problem of dead trees and their removal to "pretty up the park," satisfying the tourists' sense of neatness and diminishing fire risks, is only one of many questions which wild-life administrators of the National Park and the National Forest Services have to face, in

the many-horned dilemma posed by the necessity of getting vacationers around to see the sights and at the same time preserving the sights for them to see. Others mentioned by Mr. Wright are the trampling of the ground in congested areas, endangering even the largest trees by exposing their roots, the many ways in which careless visitors start fires, the necessary oiling of ponds to keep down mosquitoes, which, however, also unavoidably works injury to some birds, and even the automobile casualties inflicted on at least a few individuals every year.

*Science News Letter, May 19, 1934*

### MEDICINE

## Radio Knife Invented As Aid to Surgeons

**M**EDICAL men are hailing a new radio knife for surgery as a boon to surgeons and patients alike.

C. J. Breitwieser, graduate research student at the California Institute of Technology, in his spare time and with his surplus cash, built apparatus for converting an ordinary scalpel into an electrical surgical instrument by high frequency radio waves.

At a demonstration of the instrument at the Monte Sano Hospital, Los Angeles, prominent medical men, and Dr. Lee DeForest, famed radio audition tube inventor, were astonished and enthusiastic over operation of the instrument and apparatus, a vital part of which are two vacuum tubes that cost \$35 each.

The radio knife has many advantages over the electrical knife now in use, said Mr. Breitwieser, listing them as follows:

Need for cumbersome wire connections between the knife and electricity source is eliminated, and wire connections to the patient are abolished.

Being free of electrical connections and insulating material, the new knife is easier to sterilize.

Electrical properties can be given the surgeon's scalpel or operating knife.

Apparatus used to radio current to the knife can be used to keep the patient warm.

Possibility of electrical shock to either the patient or doctor is eliminated.

Another important feature is that the danger of sparking is minimized by the radio knife, thus adding another safety factor to electrical surgery.

Not having human patients on which to experiment and operate, Mr. Breitwieser "operated" on chunks of beef, demonstrating that high frequency radio waves are practical in surgery.

While the use of high-frequency electricity as a cutting medium is widely known, the possibility of getting the power by radio waves is a decidedly new development.

Electrical surgical knives cauterize the tissue as they cut, reduce the flow of blood, and are said to result in swifter healing than a cut by a non-electrified scalpel, and to leave less of a scar.

*Science News Letter, May 19, 1934*

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# •First Glances at New Books

## Botany—Horticulture

**THE ORIENTAL FLOWERING CHERRIES**—Paul Russell—*Govt. Print. Off.*, 72 p., 10c. Washington's most famous floral feature, the flowering cherry trees received many years ago as a good-will gift from Japan, has stimulated interest all over the country in the cultivation of these beautiful trees. Everybody, from the city home owner whose small yard has room for but one tree to the estate manager or park superintendent who has space for hundreds, will welcome this new Government bulletin, which tells all about them: English, Japanese and scientific names, botanical relationships, data necessary for successful cultivation. The only point of regret is that some of the 32 well-drawn full-page illustrations could not have been in color.

*Science News Letter, May 19, 1934*

## Geology

**GEOLOGY OF THE WESTERN SAN GABRIEL MOUNTAINS OF CALIFORNIA**—William J. Miller—*Univ. of California Press*, 114 p., 1 folded map, \$1.50.

*Science News Letter, May 19, 1934*

## Archaeology

**ANCIENT SYNAGOGUES IN PALESTINE AND GREECE**—E. L. Sukenik—*Oxford University Press*, 90 p., 19 pl., \$3.50. The synagogue has been called the most original and fruitful creation of the Jewish people. In recent years archaeological digging has revealed ruins and art features of a number of ancient synagogues, thus broadening greatly the understanding of what these buildings were like. Although Dr. Sukenik's book was made up from the Schweich Lectures which he delivered by invitation of the British Academy in 1930, he has brought the subject up-to-date to include such discoveries as the synagogue at Dura Europos which he calls "the most remarkable find on record in the sphere of Jewish archaeology."

*Science News Letter, May 19, 1934*

## Biology

**GENEALOGY OF SEX**—C. Thesing—*Emerson Books, Inc.*, 286 p. \$5.

*Science News Letter, May 19, 1934*

## Engineering

**AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS GUIDE, 1934**—*Am. Soc. of Heat. and Vent. Eng.*, 790 p., \$5. Considerable revision and a number of new chapters keep this

twelfth edition of a well-known handbook abreast of a field which is growing rapidly as the result of research as well as expanding commercial installation. The book contains a large section devoted to advertising of modern equipment and a membership list of the society, the latter occupying 56 pages in addition to the 790.

*Science News Letter, May 19, 1934*

## Botany

**A FLORA OF YOHO PARK, BRITISH COLUMBIA**—Titus Ulke—*Catholic Univ. of America*, 90 p., 10 pl., \$1. This annotated key to the pteridophytes and flowering plants of one of Canada's finest national parks is intended for the use of students and teachers of botany rather than for the casual tourist. It constitutes a decidedly worthy addition to the growing literature making more available for scientific study the resources of North American national parks.

*Science News Letter, May 19, 1934*

## Floriculture

**COMMERCIAL FLOWER FORCING**—Alex Laurie and L. C. Chadwick—*Blakiston*, x+519 p., \$4. Newest information and results of long experience in commercial greenhouse practice are here combined to make a book of value both for course instruction in colleges and for reference in meeting everyday problems of practical commercial flower growing.

*Science News Letter, May 19, 1934*

## Zoology

**LIONS, WILD AND FRIENDLY**—Eric F. V. Wells—*Viking Press*, 112 p., 32 pl., \$2.50. Mr. Wells has hunted lions on the veldt, has raised them on his farm. He likes them, and he makes you like them, not only with the convincing charm of his text but with the even greater charm of his superb photographic illustrations, which show the great beasts behaving just like the overgrown cats that they are. If you look through this book, you will surely want to go up to the first lion you see and rub his nose!

*Science News Letter, May 19, 1934*

## Anthropology

**CULTURAL ANTHROPOLOGY**—Albert Muntch—*Bruce Pub. Co.*, 421 p., 27 illus., \$3.75. How the more primitive half of the world lives may be learned from this well arranged text book. Taking such subjects as primitive mentality, social organization, primitive art, wisdom, and other phases of life among the so-called simpler peoples, Father Muntch illustrates with one vivid example after another from tribes all over the world. Each chapter is followed by questions and bibliography, and there is a glossary and a good index.

*Science News Letter, May 19, 1934*

## Floriculture-Botany

**DAYLILIES**—A. B. Stout—*Macmillan*, 119 p., \$3. Few perennial herbs are more worth-while to the home gardener than the various species of *Heemerocallis*. Some of them, hardy as iron pokers and rank-growing as weeds, yield crops of beauty on poor soil with but little care; others, more delicate, repay greater attention with surprises in loveliness. In this book all knowledge now current about them is summed up authoritatively by a leading American botanist.

*Science News Letter, May 19, 1934*

## Biology

**BIOLOGY FOR TODAY**—F. D. Curtis, O. W. Caldwell and Nina H. Sherman—*Ginn*, xvi+692+xxv p., \$1.76. One of the most complete and exhaustive textbooks in biology for secondary schools that has ever appeared. A unique feature is the inclusion of the U. S. National Parks as part of the "campus."

*Science News Letter, May 19, 1934*

## Paleontology

**A NEW FOSSIL HAWK FROM THE OLIGOCENE BEDS OF SOUTH DAKOTA**—A. Wetmore and E. C. Case—*Univ. of Michigan Press*, 4 p., 1 pl., 25c.

*Science News Letter, May 19, 1934*

## Paleontology

**A PRELIMINARY STUDY OF THE FOSSIL FLORA OF THE MICHIGAN COAL BASIN**—Chester A. Arnold—*Univ. of Michigan Press*, 26 p., 7 pl., 35c.

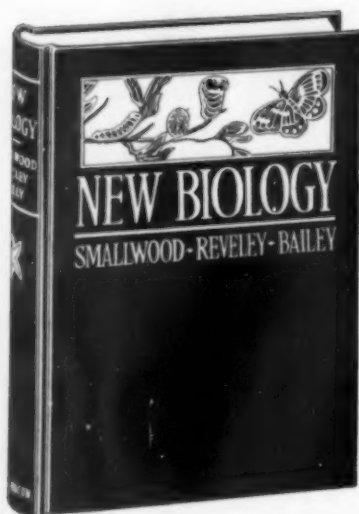
*Science News Letter, May 19, 1934*

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# BIOLOGY—The Science of Life

Life, like a dome of many-coloured glass,  
Stains the white radiance of Eternity.—*Shelley.*

**B**IOLOGY offers the young pupil a dramatic experience in a new realm of interest. In the world of biology the young learner will begin to fathom some of the profound truths that underlie the mystery and power of life. He will find answers to many of the questions for which youth is always seeking an explanation.



The learner travels from the known to the unknown. In biology he begins with familiar plants and animals and learns their life processes. Gradually he is led to what is new by noting how life processes with which he is already familiar are found in plants and animals which are new and unusual to him.

Properly taught, biology directs the growing interest of the pupil to himself, as an example of how all these life processes are continued in human biology.

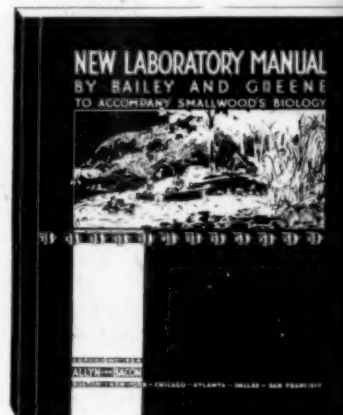
The biological unit is the living individual. It is through study of the life processes common to all living things that the fundamental facts of human living are learned. Out of this mass of old and new facts comes the knowledge of the interrelationship of man and the plant and animal world. The need for conservation of plant and animal life and the need of development and im-

provement of all living organisms become the natural conclusions of this study.

In general, biology is the study of the fundamental functions of living things. Thus it enriches the student's own life. In part it creates scientific attitudes between him and his living environment. In its objectives the study of biology parallels the cardinal aims of education.

The ideal course in biology teems with facts but it must, at the same time, provide a program of pupil activities. It must furnish plenty of indoor laboratory work for the discovering of fact and proof, and field work for stimulating interest in the study of life processes.

This course must emphasize Health by establishing habits of physical and mental well-being; Vocation by discovering interests and aptitudes as a help in vocational guidance; Leisure by developing leisure-time activities; Citizenship by presenting situations which have direct bearing on home life, group conduct, and human service.



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